DOCUMENT RESUME

ED 202 044 CS 206 325

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TITLE The Composing Process in Technical Communications.
PUB DATE Mar 81
NOTE 14p.; Paper presented at the Annual Meeting of the Conference on College Composition and Communication (32nd, Dallas, TX, March 26-28, 1981).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Class Activities; *Classroom Techniques; Curriculum Development; Higher Education; Skill Development; *Technical Writing; *Writing Exercises; Writing Instruction; *Writing Processes; Writing Skills

ABSTRACT

Technical communication teachers need to recognize the increasing diversity of their classroom populations and become more flexible in planning curricula without "watering down" students' expectations to leave the courses more skilled than they were upon entering. Teachers should discuss with students some of their writing barriers and the technical areas in which they are proficient. In one exercise that lets students experience success early in the course, three students volunteer to teach the class something through demonstrations or sets of directions. The writing assignment is for the rest of the class to write a set of directions based on one of the reports for someone who has not heard the presentation. In a group exercise to help students produce coherent, logically developed outlines, each person develops an outline, three of which are then judged by students and defended by the authors. The judges then choose the preferred outlines. Making assignments relevant, allowing students opportunities for creative problem solving, and then planning for ways to offer assistance or to help them move toward increased confidence in their skills are valid objectives for technical writing courses that focus on the writing process. (HTH)

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THE COMPOSING PROCESS IN TECHNICAL COMMUNICATIONS

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As a teacher of technical communications with some thirteen years invested in an experiential rite of passage, I have some observations to share. As a researcher, concerned with inferences that can be drawn from classroom encounters to direct planning for future courses and curricula, I hope to present some findings that you might find of value. You don't have to agree with the conclusions, but for awhile let's consider some of the forces that cause students to experience increasing success in technical communications. In this communal effort, we must also acknowledge the mirror images—those forces that cause students to fail or, worse yet, cause them to decline to participate because of fear of failure.

These observations come from working with increasingly diverse groups of students—often those once presumed to dislike written communications or thought to have little chance of success with any kind of writing, much less sophisticated reporting. Our course planning no longer centers on traditional eighteen or nineteen year olds who come straight from high school to college, already committed to a career choice from which they will not deviate during the four years required for a bachelor's degree. Our increasingly diverse classes find the traditional Joe or Jane College sitting next to someone's mother, grandfather, or pen pal from another continent. The campus classroom also may be geographically located in a shopping center, on a military base, or in the professor's office. We are indeed in a period of change; we must recognize diversity in our students, must become flexible in planning curricula, but not "water down" the expectations for students to leave our courses more skilled than they were upon entering.

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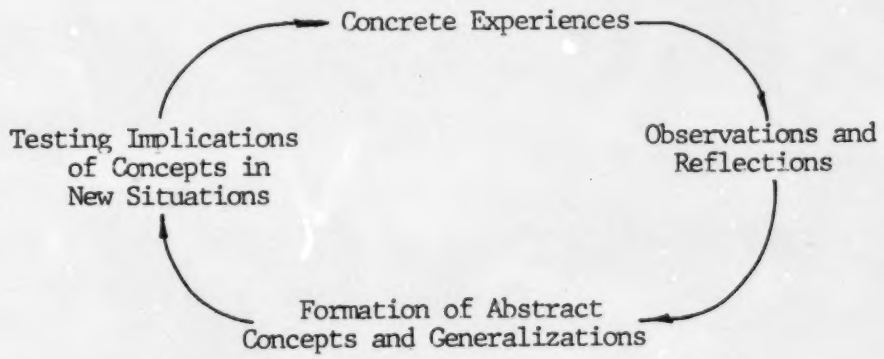
This discussion will not stress research other than to describe the theoretical construct under which the exercises operate and to share briefly some results from a 1977 survey distributed to a random sample of teachers of technical writing. The survey was part of a large study, in fact, my doctoral dissertation, to develop materials that did not stress prescriptive formats, that did draw on diverse elements in report writing to enhance the process of writing. Implicit in this concept was that as individuals we have differing learning styles as well as differing ways to process information. Particularly appealing was the experiential approach being advocated by some industrial pyschologists. Kolb's Model of the Learning/Problem Solving Process, based on Kurt Lewin's earlier conceptualization of the individual's life space, described the four stage process as starting with concrete experiences. Kolb's model has gained increasing acceptance in industry, in counselling strategies to use with clients of media centers. Professor Sean Boyle of the University of London has done related studies with adult students.


Concrete Experiences
Observations and Reflections
Formation of Abstract Concepts and Generalizations
Testing Implications of Concepts in New Situations

Kolb's Model of the Learning/Problem Solving Process

Another observation worth making at this point is that Piaget's theory of developmental reasoning--so attractive in science teaching—is similar

but it presents the distinctions between the concrete and the abstract as part of a maturity continuum—one that correlates with the individual's intelligence. The key then to the thinking behind this theory of learning being advocated as a theory of teaching is that we try to emphasize different from more than better than. Also we need to create an awareness in the individual of ways to increase inventiveness, productivity, and not the least—self-confidence in his/her own ability to do well.

The survey mentioned earlier was distributed at a technical writing session of the Four C'S (College Conference on Composition and Communication) in Kansas City, March 1977). Part I of the survey asked questions related to problem solving, paper evaluation, and individualizing instruction. The first set of questions included:

1. Teaching technical writing through problem solving should be done.
2. Self-assessment is a viable part of a student's progress in a technical writing course.
3. Each piece of writing the student does should be graded by the instructor.
4. Cognitive-field theory, as defined in the proposed guidelines, is a logical theoretical base around which to develop a technical writing course.
5. Some parts of the technical writing course could be converted to self-instruction.
6. Problem raising is a legitimate concern in technical writing.
7. It is possible to individualize instruction with larger groups of students.
8. Technical writing can stimulate technicians or technicial students to expanded insights.
9. Different goals for different students are possible in college level courses.
10. Technical writing is by nature a prescriptive course.

The table on the next page shows the range of responses to nine of these questions. Pertinent to this discussion is the agreement that we

are about the business of raising problems, even trying to solve them, and hoping all the time that we increase students' awareness—expand their views of their world—or environment—or self. One might also add that we are suspicious of psychological "claptrap" even when we agree with the theory.

IDENTIFICATION OF SELECTED ATTITUDES/PRACTICES

Item	N	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
		Percentage of Responses				
Problem Raising	31	38.7	58.1	--	--	--
Problem Solving	32	53.1	40.6	--	--	--
Expanded Insights	32	75.0	21.9	--	--	--
Cognitive-field	29	6.9	20.7	--	--	--
Differing Goals	32	56.3	34.4	6.3	3.1	--
Self-Assessment	31	38.7	48.4	9.7	3.2	--
Grading by the Instructor	32	28.1	15.6	6.3	34.4	15.6
Self-instruction	32	25.0	53.1	9.4	9.4	3.1
Individualizing for Large Groups	32	34.4	37.5	21.9	--	6.3

The main statement about which there was disagreement was the need for the instructor to grade each piece of writing that the student produces. Those who had taught more than ten years were much more reluctant to share the responsibility than those who had taught fewer years. We are divided in our perceptions of the nature of the course. Half of the respondents, strongly agreed or agreed that technical writing is a prescriptive course,

another twelve and one-half per cent were undecided, while the remaining thirty-seven and one-half per cent either disagreed or strongly disagreed.

It doesn't matter that we teachers don't agree whether technical writing courses are prescriptive or not. Some elements are prescriptive; some are not. Prescribed formats avoid placing obstacles in the readers' way. We plan for their expectations and smooth the path for an expeditious journey. On the other hand, at times creative experiments with standard formats produce efficient, pleasing results. Look how graphics have moved into an integral role in so many sets of instructions. Consider how more efficient information mapping is for troubleshooting. Skim reading such charts allows readers to select only the information germane to their problems.

What then should concern us in contemplating the composing process? Many diverse elements, but for now, let's consider recognizing that:

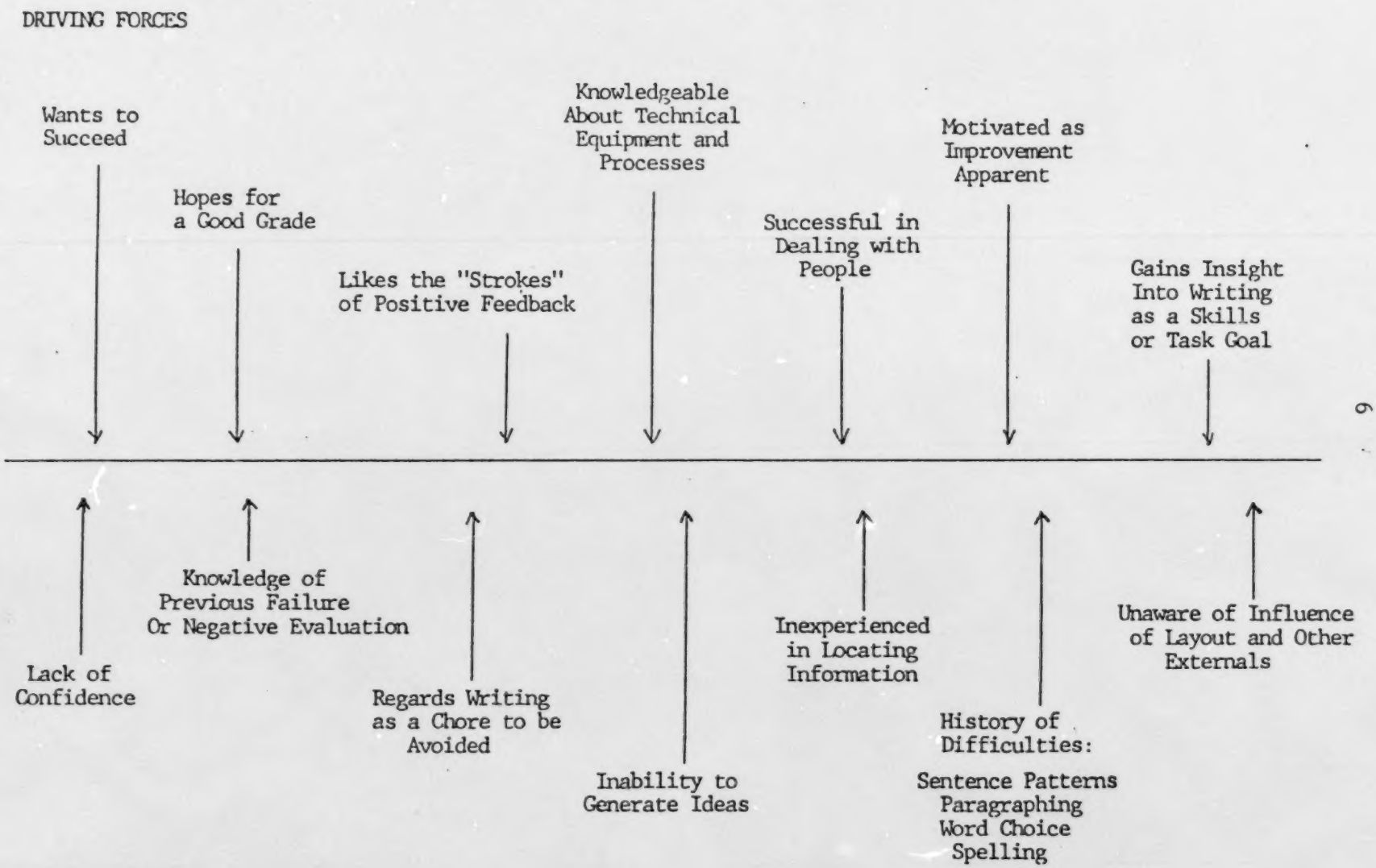
(1) Students want to succeed. We need to create and environment that helps make success possible.

(2) Peer group activity often can play an important role in helping some students who might not respond through lecture or individual study.

(3) Relevant assignments, or simulations students perceive as relevant, will encourage growth in abilities and help motivate students' interest in writing projects.

Students want to do well. What can we do to help them? First of all, we need to recognize forces that serve to push and pull, drive and restrain them. Many of the technical students that enroll in my classes have not done well in previous English classes in high school—or even in college. But they are skilled in ways that many of us are not. They may have better hand and eye coordination; they may have more analytical miinds that can help them in shop situations, with design problems, and even in communicating technical information orally to supervisors or peers. But they may lack confidence in more formal situations as they may dread writing reports. The theoretical model on the next page depicts some forces.

THEORETICAL MODEL: FIELD OF FORCES, THE INDIVIDUAL AND TECHNICAL COMMUNICATIONS


DRIVING FORCES
Wants to Succeed
Hopes for a Good Grade
Likes the "Strokes" of Positive Feedback
Knowledgeable About Technical Equipment and Processes
Successful in Dealing with People
Motivated as Improvement Apparent
Gains Insight Into Writing as a Skills or Task Goal
Lack of Confidence
Knowledge of Previous Failure Or Negative Evaluation
Regards Writing as a Chore to be Avoided
Inability to Generate Ideas
Inexperienced in Locating Information
History of Difficulties:
Sentence Patterns
Paragraphing
Word Choice
Spelling
Unaware of Influence of Layout and Other Externals
RESTRAINING FORCES

Adapted from Kurt Lewin's Field of Forces
(From A Dynamic Theory of Personality, Selected Papers, 1935)

Discuss with students some of the barriers—real or imagined—that hinder their writing efforts. Go beyond the grammatical concerns, problems with spelling. Start to explore time management, work habits. Often I start classes, especially with adult students when I send the reading assignment prior to the first class meeting, by asking students to write an introductory memorandum outlining their personal goals for the course. Responses often reflect work habits, attitudes, and expectations,

> "I hope to remove my mental block towards writing."
>
> "My major problem is being too lazy to read the information I need. If I develop skills in information gathering, I should be able to produce better work."
>
> " All I want to get is an A."

Even more perceptive responses come when you ask for anonymous statements.

Start directing their critical skills into the current subject matter of their intended fields. Having even a cursory knowledge of issues related to their major helps in developing handouts planned for their specialty. Several of the self-assessment sheets that prove useful with the above suggestions are found on pages 8, 9, and 10.

Let students experience success early in the course. One exercise that I have used for the past several semesters is to involve oral communications as the basis for their first paper. Three students volunteer to teach the class something they consider we would find interesting or something that we should learn how to do. These students teach us through demonstrations, sets of directions, or through answering questions posed by the class. The writing assignment is for the rest of the class to write a set of directions based on one of the reports. These directions would be intended to instruct someone how to perform the process without having heard the oral presentation. The papers, for the most part, have been well written—not really too difficult to write. Topics that worked well were "How to Select a Used Car" (tips from

SELF-ASSESSMENT
REPORT WRITING

Some people think they do not write well and dislike report writing. Others find it a real challenge and enjoy meeting its demands. The rest of us fall somewhere in between depending on the reason for the report and the pressures of our other commitments. One can wonder how much the process of writing affects the end product and our attitude towards the task. Why not ask yourself these questions:

1. Given a choice, I prefer to

   _____ Write.

   _____ Phone.

   _____ Talk directly to the person with whom I am communicating.

2. Directed to write a report, I usually

   _____ Think about it for several days, and then get started.

   _____ Get to work immediately so it can be finished as soon as possible.

   _____ Put it off as long as possible.

3. My composition process goes like this

   _____ A satisfactory report written in a single draft.

   _____ Three or four revised drafts before I'm satisfied.

   _____ Draft, edit, revise.

4. My revisions are usually for

   _____ spelling

   _____ punctuation

   _____ word choice

   _____ sentence order

   _____ clarity

   _____ brevity

5. For reports with which I am extremely careful

   _____ I do all the editing.

   _____ I ask a colleague to read them over.

   _____ My secretary can be depended upon to catch all errors.

SELF-ASSESSMENT
REPORT WRITING

One final question you might ask yourself:

When I complete a report, I feel _____

If you are interested in how others approach the process of report writing, you would enjoy reading H. J. Tichy's discussion of writing from the standpoint of the stages involved. Her discussion is summarized on the next page in terms of four steps: Plan, Write, Cool, Revise. The last step, she calls "purposeful revision" that contains five necessary steps itself.

1. Ask two questions--

   a. Does this paper contain all the material that my reader needs?

   b. How much material can I remove without interfering with my reader's understanding and needs?

2. Strive for clarity--

   a. Rephrase ambiguous expressions even though you think that the reader will know what is meant. "A reader should never be given the opportunity to think, 'Well, I know what you mean to say because I know what you ought to be saying, but you haven't said it.' As soon as a reader must supply what a writer intended to say, the writer has failed." (13)

   b. Know how to choose the best word for his meaning, how to make his sentences clear, and how to construct paragraphs that develop his meaning helpfully and clearly.

3. Correct the writing. Think in this reading in terms of errors.

4. Strenuously attempt to reduce the number of words.

5. Attempt to develop a better style, advanced work, in this final revision.

SELF-ASSESSMENT THE PROFESSIONAL PERSON

An example of decisions which face people on their jobs can be seen with dental technicians and the choices they must make to advocate or fight against denturism, a growing movement in the United States. Denturism is the practice of a technician dealing directly with a patient who needs dentures. The dentist serves a lesser role in the process, with the public paying less and the technician receiving more for this services than he does currently. Obviously, there are divisive attitudes toward this movement.

Some consider denturism simply as "bootlegging" done by the unethical. Others view it as the movement of the future. People entering the field and those currently working in it are going to be forced to take sides--to make a reasoned and ethical decision of their own stand.

All professions are subject to changes of one sort or another. Think how deregulation of the airlines has affected and will affect the job of the airport manager, how microprocessors have affected the entire electronics industry.

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an automotive student), "How to Save a Person from Choking," (from a licensed EMT), "How to Dry Mount Photographs for Less Than $2," even "How to Break a Thick Board with Your Hand." With such activities, the students who takes notes well, asks the right questions,can write coherent papers. Of course, the verbal skills of the speakers affect the content and its organization.

Peer group enterprise can help in ways that supplement what the instructor is hoping to make clear. It can also not work well when class members think that they are being asked to make judgments about the quality of their peers' work that will affect their grades. Dividing the class into editorial committees that charge each group with a particular task—layout, completeness, unanswered questions, even grammar and spelling—works if the writing is returned directly to students for incorporating many of the suggestions. Too much authority to those who may offer misleading or even incorrect advice works against the effectiveness of the exercise.

One exercise that has been of value in helping students produce coherent, logically developed outlines involves the class as a group. The class helps select a topic for a research report that all might choose to develop. (Only for the purpose of this in-class activity, not for their formal reports.) Each person is to develop an outline according to a logical format for organizing the report. After a given amount of time, names are drawn randomly for three people to put their outlines on the board, and three others who will serve as judges who will determine the winner of these three outlines. First of all, the judges read the three outlines and write down the order of their choices independently. Then the author of the outline presents it to the judges and the class, answering any questions from either group. Then the judges orally, in front of the class, come to a unanimous choice of their preferred outline.

The preceding exercise came about almost spontaneously with a class of adult students. It seemed to break a policy that I have tried to maintain throughout teaching—not to criticize a person's writing in front of others, especially the entire class. Strangely enough, this exercise takes on a more positive dimension. Sometimes the judges have changed from their original choices after hearing the oral defense. That leads into the need for answering such questions in the phrasing of the outline. The random selection of both participants and judges makes the process have an aura of fairness. And, the outlines that students have written in planning their own reports have been much better than those written in other classes.

Making assignments relevant, allowing students opportunities for creative problem solving, and then planning for ways to offer assistance or help them move towards increased confidence in their skills—aren't these valid objectives for us as we look at the composing process. I would like for all my students to receive A's from the course—but I know they won't. But it is not unrealistic to have as an objective to hope that they leave the class with increased writing skills and a growing awareness of the diverse elements that bond together the process of composition.

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